DOCUMENT RESUME

ED 051 982 RE 003 684

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TITLE Modifications in Teachers' Questioning Behavior in the Development of Reading Comprehension and a Series of Supervisory Conferences.
PUB DATE Apr 71
NOTE 21p.; Paper presented at the meeting of the International Reading Association, Atlantic City, N.J., Apr. 19-23, 1971

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS *Behavior Change, Behavior Patterns, Comprehension, *Conferences, Inquiry Training, *Inservice Teacher Education, *Questioning Techniques, Reading Comprehension, Reading Research, Recall (Psychological), Recognition, Supervisory Activities, *Teacher Behavior, Teaching Techniques

ABSTRACT

The relationship between teacher questions and a series of supervisory conferences designed to modify those questions from recall and recognition to higher levels of comprehension was investigated. Five Toronto, Ontario, third-grade teachers were randomly selected to participate in the study, and their progress was recorded through individual case-study reports. The first two conferences were intended to make teachers aware of type of questions and levels of comprehension, and the final conference gave teachers an opportunity for self-analysis of changes in their behavior. Tapes of classroom reading lessons were made previous to each conference for use in the conference. As a result of the conferences four of the teachers made modifications of their behavior, decreasing the number of recognition questions. Two teachers made the changes at the end of the first conference, the others by the end of the second. The fifth teacher, who did not actually make changes, indicated an understanding of how to do so after the self-analysis conference. It is suggested that supervisory conferences such as those used in this study might be of benefit in inservice programs. References and tables are included. (MS)

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MODIFICATIONS IN TEACHERS' QUESTIONING BEHAVIOR IN THE DEVELOPMENT OF READING COMPREHENSION AND A SERIES OF SUPERVISORY CONFERENCES

SESSION: Research Reports

Wednesday, April 21, 1971 - 4:00-5:00 p.m.

Recent research on teacher behavior in the development of reading comprehension (2) reveals a concentration on questions for recall and recognition and suggests that this is a result of teachers' lack of awareness of the various dimensions of reading comprehension. Research on teaching behavior, in general, suggests that supervisory conferences may have a role in fostering changes in teachers' questioning behavior.

The purpose of the study was to investigate the relationship

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between the percentage of teachers' questions designed to elicit recognition and recall and a series of supervisory conferences during which the teachers were made aware of specific dimensions of reading comprehension.

The study sought to identify and describe the modifications, if any, of teachers' questioning behavior relative to six dimensions of reading comprehension: recognition, translation, inference, evaluation, explanation, and imagining.

Samples of teachers' questioning behavior in the development of reading comprehension were examined before, during, and following the series of supervisory conferences. The verbal behavior of the conferences was analyzed according to the content of each conference with each teacher.

Definitions

Change or Modification - Change is defined as evidence of a different distribution in the teachers' questioning in terms of variety and frequency among the six categories of reading comprehension.

Treatment - The supervisory conferences were considered the treatment.

General Hypothesis -

The general hypothesis of the study was that changes in teachers' questioning behavior in lessons designed to develop reading comprehension were facilitated through a particular sequence of supervisory conferences. In comparison with the lessons taught prior to the conferences, those following the series showed a changed distribution in the frequency of the various kinds of questions. The change was in the

direction of a decrease in the number of questions evoking recognition; the decrease proportionate to the total number of questions posed during the lesson.

Specific Questions for Research

1. Did changes occur in the teachers' questioning behavior in the development of reading comprehension during the particular series of supervisory conferences?
2. Following the series of supervisory conferences, what were the changes in the direction, frequency and proportion of teachers' questions asking for the literal comprehension dimension of recognition?
3. If a decrease occurred in the frequency and proportion of questions evoking the recognition dimension following the series of supervisory conferences, was there an effect upon the questions eliciting the rest of the dimensions of reading comprehension?
4. Was there a change in the direction, frequency and proportion of teachers' questions asking for the literal comprehension dimension of recognition following either Conference I or II?
5. If a decrease occurred in the frequency and proportion of questions evoking the recognition dimension following the first and/or second conference, was there an effect upon the questions eliciting the rest of the dimensions of reading comprehension?
6. What were the stated opinions of the teachers as to what phases of the treatment, if any, influenced them into modifying their questioning behavior in the development of reading comprehension?

Categories of Reading Comprehension

The study examined six dimensions of reading comprehension, which were not considered in a hierarchical order.

Recognition - The information can be found clearly in the textual material and the reader is required to have only a literal understanding of it. The comprehension skill involves the task of locating the information and recalling it upon request or reading it directly from the text. Such activity is concerned essentially with the retrieval of small portions of factual material, although the activity can vary greatly in difficulty depending upon the nature of the item called for and its prominence in the text.

Translation - The reader is required to render in his own words an accurate construction or version of the word, phrase, or sentence found in textual material. The behavior is at the literal understanding level in that the translator does not have to discover relationships, implications, or subtle meanings. He must, however, be able to change words, ideas, or images found in the written material into his own words. He can translate from one level to another as in definitions of words, in moving from lengthy communication to that of succinctness or vice versa, and in changing from figurative language to literal English.

Inference - To be able to infer requires "reading between the lines", seeing relationships between facts, events, and ideas, finding subtle or hidden meanings, and perceiving implications. The reader must discriminate, abstract, and generalize from the information presented as

well as classify, summarize, and state the main ideas along with any supporting details. Unless the information is stated clearly in the text, questions eliciting description, comparison, and contrast, also come into the category of inference.

Evaluation - Matters of personal value rather than of fact or inference are the concern of evaluation; the reader is required to pass his judgment concerning such matters as particular characters, events, and feelings evoked by his reading. Evaluation may include inference but goes beyond it and is characterized by qualitative and quantitative judgmental action which is concerned with such matters as: desirability, worth, acceptability, significance, accuracy, amount, degree, and condition.

Explanation - When asked to explain or elaborate, the reader must be able to offer a rationale as to the "why" of a situation. The rationale must be based upon information either inferred from, or stated in, the material read and upon which the reader wishes to elaborate. In elaborating, the reader is permitted to expound, disclose, clarify, or prove. It is in this category that the reader tells why he thinks as he does.

Imagining - Extrapolating information from the written material, the reader discovers new relationships, principles, or ways of looking at things. He can develop or elaborate upon the author's thoughts, transforming and rearranging them according to his needs. He can hypothesize and can show his resourcefulness by offering suggestions based on the situation presented in the reading material.

General Design of the Study

1. Initial Tape-Recording Session - A set of two lessons in reading comprehension taught by each teacher in the study was taped.
2. Conference I - The aim of the first conference was to make the teacher aware of the purposes of questioning in a reading comprehension program. The supervisor discussed with the teacher the general uses of questioning: testing knowledge, building knowledge, and fostering self-reliance in the reader. Specific characteristics of adequate questioning such as variety in the teacher's questioning to promote the various dimensions of reading-thinking operations, and careful organization and logical sequencing of questions were also discussed.

   Since it was impossible to predict the course of the discussion during the conference, a tape-recording of the discussion was transcribed and analyzed for the topics discussed, ideas elicited from the teacher, and suggestions made by the teacher. This procedure was followed for each of the teachers in the study.
3. Second Tape-Recording Session - A set of two lessons followed Conference I. The lessons were taped under conditions similar to those [redacted] for the first taping session.
4. Conference II - During this conference, the teacher and the reading supervisor discussed in detail the six dimensions of reading comprehension. Following this discussion, they suggested jointly various kinds of questions likely to evoke these dimensions.

   Due to the nature of this conference, it was not

possible to predict the course of the discussion. As in Conference I, a tape-recording was taken, transcribed, and analyzed for the categories of questions discussed and for the ideas and suggestions offered by the teacher. This procedure was followed for each teacher in the study.

5. Third Tape-Recording Session - Two lessons were taped under conditions similar to those prevailing in the first two taping sessions.
6. Conference III - A tape-recording was played of one of the lessons in the third taping session. The lesson was self-analyzed by the teacher regarding his questioning behavior in the development of reading comprehension. The purpose of this procedure was to foster self-improvement through self-appraisal. During this conference, the teacher was encouraged by the supervisor to formulate his own ideas concerning his questioning behavior and offered suggestions as to how the teacher might improve it.

Following the playing of one of the tapes from the third taping session, the teacher analyzed it and the accompanying transcription in the presence of the reading supervisor. The reading supervisor offered supporting comments to the observations made by the teacher. This procedure was followed with each teacher in the study.

A tape-recording of this conference was transcribed and analyzed for the kinds of observations made and for the suggestions offered by the teacher for improving his questioning behavior in the development of reading comprehension.

7. Fourth Tape-Recording Session - A set of two lessons were taped under conditions similar to those of the previous taping sessions.
8. Post-Treatment Interview - An unstructured interview was conducted during which the teacher's evaluation of changes in his questioning behavior in relation to the intervention of the series of supervisory conferences was obtained. During this assessment, factors conducive to any modifications which have been noted were determined and, if no change had been observed, reasons for the absence of change were identified.

The entire experimental period extended over approximately six weeks.

Sample

From teachers with at least one year of teaching experience, in one particular school district, five third grade teachers were randomly selected to participate in the study. Each teacher was from a different school. The initial contact with each teacher was made through the reading-instructional department of the school district. No information was given to the teacher or his principal excepting that the investigator wished to obtain data concerning the verbal interaction between the teacher and his pupils during a lesson in reading comprehension.

The investigator assumed the role of the reading supervisor.

Source for the Data

The data for the study were obtained from the taped content of the lessons developing reading comprehension. Though every lesson was

transcribed in its entirety, only the teacher's questions were examined.

Analysis of Data

In the study significant differences were reported for the frequencies of the questions for the different dimensions of reading comprehension. To test the compatability of observed and expected frequencies, chi-squares were used. To obtain a more accurate view of the changes in the recognition dimension, significance of the difference between proportions of questions was determined, based on frequencies in the recognition dimension.

PILOT STUDY

The pilot study undertook to:

1) train the judges in classifying the questions according to the descriptions of each dimension of reading comprehension used in the study;
2) determine the validity and reliability of the categories of questions to be used in the research study;
3) determine how many lessons should constitute a taping session;
4) establish some standard procedures for the conferences;
5) train the supervisor in the use of the supervisory conferences;
6) develop the procedures for obtaining the data; and
7) explore the difficulty level of the reading material to be used in the study.

RESEARCH STUDY

One suburban school district of metropolitan Toronto, Ontario, was engaged in the research study. The school district, which was composed essentially of a middle-class population, agreed to permit its teachers to participate in the study. Five third grade teachers were selected (See "Sample".)

Subject Matter

Each teacher was asked to prepare lessons based upon ten selections of content material. Only two selections were given to the teacher at any one time. The children received their individual copies at the beginning of each lesson.

The reading material was new, being part of a new basal reading series, then in press (1). Neither the teachers nor the pupils had seen any part of the material prior to the experimental study. The material was selected from the third grade reader in the series, since no obvious reading difficulties had been noted during the pilot study.

Collecting the Data

A schedule of observations was arranged by the investigator with each teacher. Each of the lessons and the conferences was scheduled for the same time on alternate days. A half-hour was allowed for each lesson and for each conference. A schedule was given to both the teacher and her principal.

Each teacher was asked to teach the same group of children at the same time of the day for each taping session. The group selected by each teacher was composed of girls and boys considered to be of nearly

average reading ability. Since the study concentrated directly on the modifications in the teachers' questioning behavior, no efforts were made to determine exactly the children's reading abilities. To allow time for teacher preparation, the lessons were taped two days apart. Each lesson was taped in its entirety.

Each teacher was asked to refrain from attending any outside interventions (workshops, lesson demonstrations, etc.) for the duration of the study, to preclude the possibility of outside interventions influencing the teachers' questioning behavior.

To negate the distorting effect of novel procedure upon the teachers' questioning behavior, four lessons in reading comprehension were taped prior to the first conference, the first two taped lessons being omitted from the study.

All taping was carried out by the investigator.

The conferences were conducted outside the classroom but at the same prearranged time as the reading comprehension lessons.

Findings of the Study

Since the five teachers in the study had a variety of experiences and qualifications, each teacher was treated as a separate case study.

Tables 1 through 5 present the frequencies and percentages of teachers' questions in the six dimensions of reading comprehension before, during and following the supervisory conferences. Table 6 presents the differences between the proportions of questions eliciting the recognition dimensions for the five teachers.

The findings are submitted below in relation to the specific questions for research.

TABLE 1

TEACHER I - FREQUENCIES AND PERCENTAGES OF QUESTIONS ELICITING SIX DIMENSIONS OF READING COMPREHENSION PRE- AND POST-SUPERVISORY CONFERENCES

		READING COMPREHENSION DIMENSIONS						
Taping Session		Recognition	Translation	Interence	Evaluation	Explanation	Imagining	Number of Questions
I	f	47	4	11	13	24	18	117
	%	40.17	3.41	9.41	11.11	20.51	15.39	
II	f	64	3	4	30	30	16	147
	%	43.54	2.04	2.72	20.41	20.41	10.88	
III	f	76	6	7	32	33	50	204
	%	37.25	2.94	3.43	15.69	16.18	24.51	
IV	f	40	3	12	45	79	48	227
	%	17.62	1.32	5.29	19.82	34.80	21.15	
				.05= (7.81)	.01= (11.34)	.001= (16.27)		
X^2 =		50.25	df = 3	*	**	***		

TABLE 2

TEACHER II - FREQUENCIES AND PERCENTAGES OF QUESTIONS ELICITING SIX DIMENSIONS OF READING COMPREHENSION PRE- AND POST-SUPERVISORY CONFERENCES

		READING COMPREHENSION DIMENSIONS						
Taping Session		Recognition	Translation	Inference	Evaluation	Explanation	Imagining	Number of Questions
I	f	46	4	0	25	20	18	111
	%	41.44	5.61	0	22.52	18.02	12.61	
II	f	27	3	12	25	27	9	103
	%	26.21	2.91	11.66	24.27	26.21	8.74	
III	f	25	6	26	20	31	15	123
	%	20.32	4.87	21.13	16.26	25.21	12.11	
IV	f	49	3	5	47	28	24	156
	%	31.41	1.92	3.21	30.13	17.95	15.38	

		.05= (7.81)	.01= (11.34)	.001= (16.27)
X^2 = 14.03	df = 3	*	**	***

TABLE 3

TEACHER III - FREQUENCIES AND PERCENTAGES OF QUESTIONS ELICITING SIX DIMENSIONS OF READING COMPREHENSION PRE- AND POST-SUPERVISORY CONFERENCES

		READING COMPREHENSION DIMENSIONS						
Taping Session		Recog-nition	Trans-lation	Infer-ence	Evalu-ation	Explana-tion	Imag-ining	Number of Questions
I	f	25	8	4	7	9	9	62
	%	40.32	12.90	6.45	11.29	14.52	14.52	
II	f	41	0	6	8	9	17	81
	%	50.62	0	7.41	9.87	11.11	20.99	
III	f	37	4	8	10	18	3	80
	%	46.25	5.00	10.00	12.50	22.50	3.75	
IV	f	28	7	11	5	32	15	98
	%	28.57	7.14	11.23	5.10	32.65	15.31	
				.05= (7.81)		.01= (11.34)	.001= (16.27)	
X^2 = 21.35 df = 3				*		**	***	

TABLE 4

TEACHER IV - FREQUENCIES AND PERCENTAGES OF QUESTIONS ELICITING SIX DIMENSIONS OF READING COMPREHENSION PRE- AND POST-SUPERVISORY CONFERENCES

		READING COMPREHENSION DIMENSIONS						
Taping Session		Recognition	Translation	Inference	Evaluation	Explanation	Imagining	Number of Questions
I	f	24	3	11	13	15	1	67
	%	35.82	4.48	16.42	19.40	22.39	1.49	
II	f	42	1	5	13	22	3	86
	%	48.84	1.16	5.81	15.12	25.58	3.49	
III	f	57	3	10	11	23	7	111
	%	51.35	2.70	9.01	9.91	20.72	6.31	
IV	f	47	2	9	19	24	9	110
	%	42.73	1.82	8.18	17.27	21.82	8.18	
				.05= (7.81)	.01= (11.34)	.001= (16.27)		
X^2 = 4.80 df = 3				N.S.	N.S.	N.S.		

TABLE 5

TEACHER V - FREQUENCIES AND PERCENTAGES OF QUESTIONS ELICITING SIX DIMENSIONS OF READING COMPREHENSION PRE- AND POST-SUPERVISORY CONFERENCES

		READING COMPREHENSION DIMENSIONS						
Taping Session		Recognition	Translation	Inference	Evaluation	Explanation	Imagining	Number of Questions
I	f	44	7	9	12	8	8	88
	%	50.00	7.95	10.23	13.64	9.09	9.09	
II	f	21	1	0	13	11	6	52
	%	40.39	1.92	0	25.00	21.15	11.54	
III	f	37	0	18	15	9	21	100
	%	37.00	0	18.00	15.00	9.00	21.00	
IV	f	14	0	5	39	19	35	112
	%	12.50	0	4.46	34.83	16.96	31.25	
				.05= (7.81)	.01= (11.34)	.001= (16.27)		
X^2 = 34.81		df = 3		*	**	***		

TABLE 6

DIFFERENCES BETWEEN THE PROPORTIONS OF QUESTIONS

ELICITING RECOGNITION

Teacher	Taping Session	Combined Proportion	Standard Diff. of Proportion	Derived t-value	df	.05= (1.96)	.01= (2.58)	.001= (3.29)
	1-2	.4204	.0763	.442	262	N.S.	N.S.	N.S.
I	2-3	.3988	.0530	1.187	349	N.S.	N.S.	N.S.
	3-4	.2691	.0428	4.589	429	*	**	***
	1-2	.3411	.0648	2.349	212	*	N.S.	N.S.
II	2-3	.2300	.0562	1.046	224	N.S.	N.S.	N.S.
	3-4	.2652	.0532	2.087	277	*	N.S.	N.S.
	1-2	.4615	.0842	1.223	141	N.S.	N.S.	N.S.
III	2-3	.4844	.0788	.544	159	N.S.	N.S.	N.S.
	3-4	.3651	.0725	2.438	176	*	N.S.	N.S.
	1-2	.4314	.0807	1.613	151	N.S.	N.S.	N.S.
IV	2-3	.5025	.0718	.3495	195	N.S.	N.S.	N.S.
	3-4	.4705	.0671	1.284	219	N.S.	N.S.	N.S.
	1-2	.4642	.0872	1.103	138	N.S.	N.S.	N.S.
V	2-3	.3815	.0830	.407	150	N.S.	N.S.	N.S.
	3-4	.2405	.0588	4.166	210	*	**	***

Question 1 - With one exception, all the teachers made modifications in their questioning behavior during the series of supervisory conferences. As Tables 1 through 5 indicate, three teachers' changes were significant at the .001 level and one at the .01 level, indicating these modifications could not be accounted for by chance.

Question 2 - The differences noted in the recognition dimension when the first and final taping sessions were compared are:

Teacher I	-	decrease of 22.55%
Teacher II	-	decrease of 10.03%
Teacher III	-	decrease of 11.65%
Teacher IV	-	increase of 6.91%
Teacher V	-	decrease of 37.50%

Table 6 indicates that three teachers decreased the proportion of recognition questions, one at .05 and two at .001 levels of significance.

Question 3 - Tables 1-5 show that there was no clear-cut effect upon the questions calling for the rest of the dimensions of reading comprehension following the supervisory conferences. Explanation appeared to be the one dimension which received greater attention from all three teachers who made significant changes in their questioning behavior.

Question 4 - Following the first conference, two teachers decreased their emphasis upon the dimension of recognition by 15.23% and 9.92% as indicated in Tables 2 and 5 with the former decreasing the proportion at .05 level of significance as shown in Table 6. Tables 1 through 5 show that after the second conference, four teachers reduced the concentration on the recognition dimension ranging from 6.29% to 3.38%; no significant changes were noted in the proportions of recognition questions.

Question 5 - The teacher who decreased her proportion of recognition questions following the first conference, placed relatively greater emphasis upon inference and explanation dimensions as indicated in Table 2.

Question 6 - Two teachers stated that they did not change their questioning behavior during the series of supervisory conferences. Three stated they had changed and that this change was in the direction of a reduction in the number of questions evoking the dimension of recognition. Of these three teachers, one thought the change was related to the combination of Conferences II and III, while two thought it was Conference III. All three teachers acknowledged however, that the particular sequence of supervisory conferences was essential in promoting and facilitating the change.

Summary

As evidenced by the data in this study, the teachers dwelt on the literal comprehension area of recognition in higher proportions than in any other of the six dimensions of reading comprehension. The study suggests that neither Conference I, which made teachers aware of the importance of questioning in reading comprehension, nor Conference II, which made them aware of the different types of reading comprehension dimensions with samples of questions to elicit each, helped teachers to change significantly their questioning behavior in the development of reading comprehension. The subsequent self-evaluation of teachers' questioning behavior in reading comprehension in Conference III facilitated significant changes in both the frequency and proportion of questions evoking the dimension of recognition. It should be noted, however, that the self-evaluation was based upon the awareness of the importance of teacher's questioning in the development of reading comprehension and upon the discussion of the different dimensions of reading comprehension. Hence it would appear that it was the series of supervisory conferences

which was related to the outcome of decreases in the frequencies and proportions of recognition questions and not just the third conference.

No definite pattern was evident for the other categories of reading comprehension in the teachers' questioning. It would appear that for particular changes in certain reading comprehension dimensions to occur, direct attention needs to be focussed on these dimensions.

According to the opinions of the majority of the participating teachers, the series of three supervisory conferences facilitated changes in their questioning in the development of reading comprehension regarding a reduction in the frequency and in the proportion of questions evoking the dimension of recognition.

One of the two teachers who did not make any significant changes in her questioning behavior, stated that the series of conferences made her aware for the need of more guidance and help in effecting the desired changes. This suggests that the series would not be sufficient for all teachers in effecting certain changes and that for some teachers further conferences with more direct assistance from the supervisor would be needed.

Implications

By demonstrating that third grade teachers in this district most frequently elicit the recognition dimension of reading comprehension and that for the majority of the teachers, its subsequent reduction is related to the series of supervisory conferences, the study suggests the need for such a series becoming a part of an in-service program in reading comprehension.

The fact that a teacher was made aware that she required more assistance and indicated the kind of assistance she needed, appears to reinforce the value of incorporating this series of conferences into an in-service training program for teachers of reading comprehension.

The study indicates that the series of supervisory conferences should be held within a concentrated period of time. Regular visits and conferences within this period of time are essential in effecting changes in teachers' questioning behavior in this area of reading.

Tapes should be used frequently during supervisory conferences for the improvement of teachers' questioning procedures in developing reading comprehension. Such an aid could be used effectively to inform the teacher of her current instructional behavior and to point the direction for improvement. It could also serve as a vehicle to teach with some precision, knowledge about the various reading comprehension components, to suggest alternative ways to develop reading comprehension, and to offer samples of different teachers' questioning behaviors in developing reading comprehension. The tapes have a further advantage in that they could be reviewed from time to time for a variety of purposes, such as evaluating the progress teachers make in effecting the desired changes.

[1] Canadian Heritage Readers, Dent Company, Toronto.

[2] Guszak, Frank James. "A Study of Teacher Solicitation and Student Response Interaction about Reading Content in Selected Second, Fourth and Sixth Grades". Unpublished Ph.D. Dissertation, University of Wisconsin, 1966.